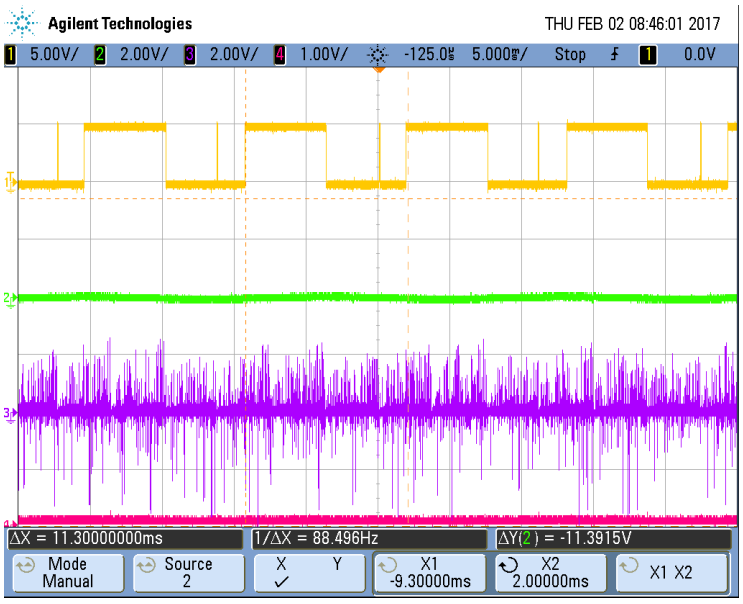
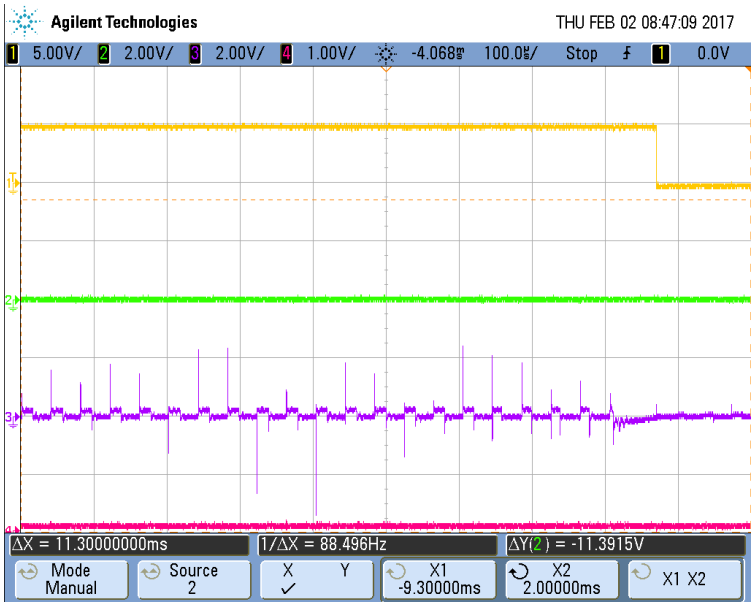
Comparing Isense current between DRV8307EVM and my custom board
Channel 1: Hallout Signal
Channel 3: Isense

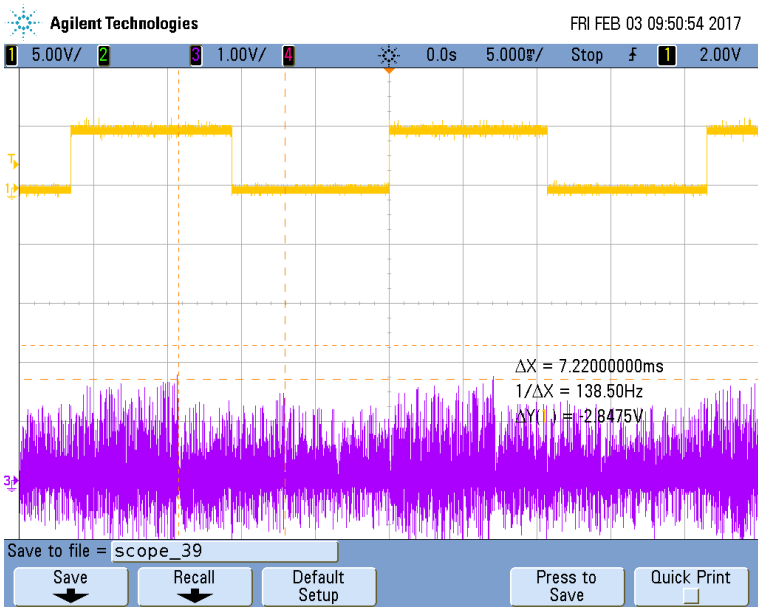
DRV8307EVM Board

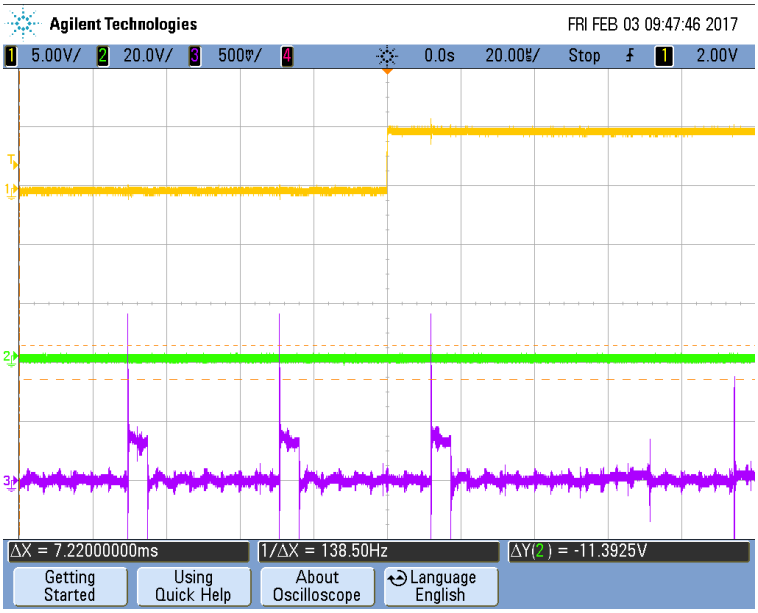
NOTE: the current pulse on my custom board are about twice the amplitude on my custom board, for a similar RPM. The C4,C5,C6 caps were removed for these measurements. The value of the Isense resistor R2 is .014 ohms (= (2) .028 ohm in parallel)

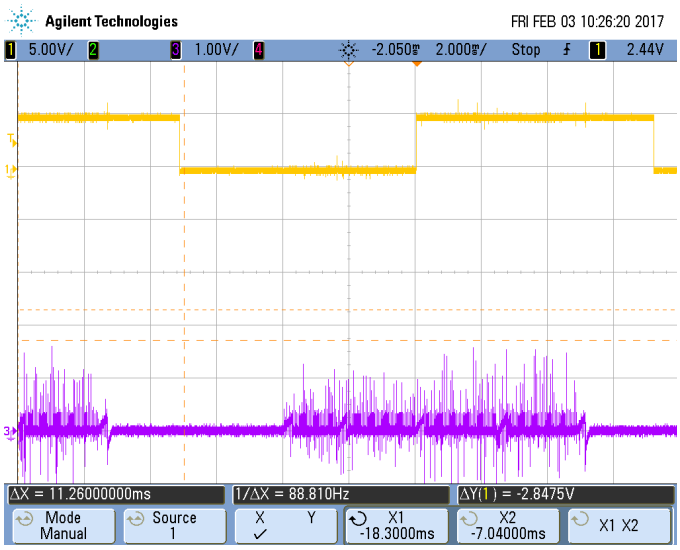


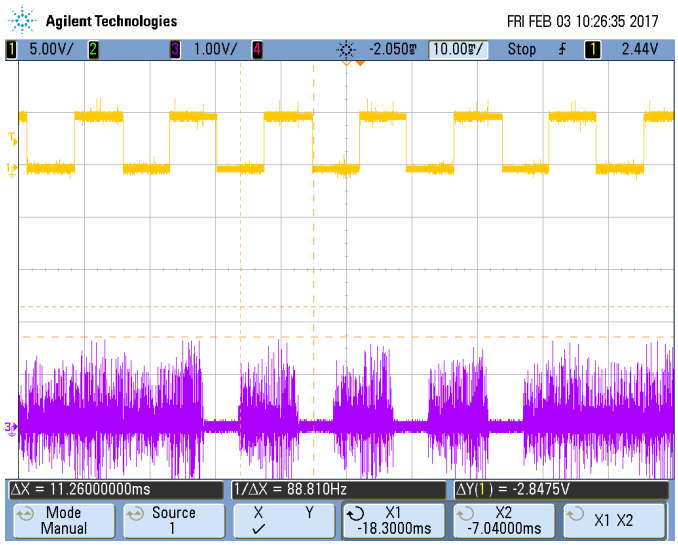


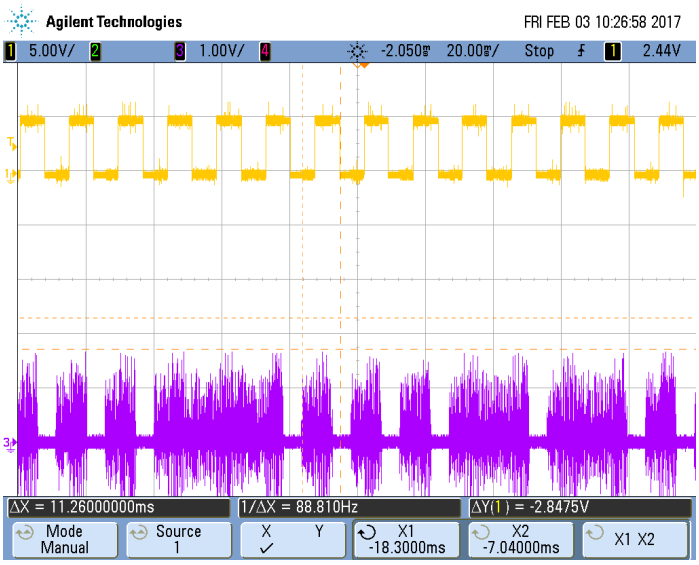
My Custom Board





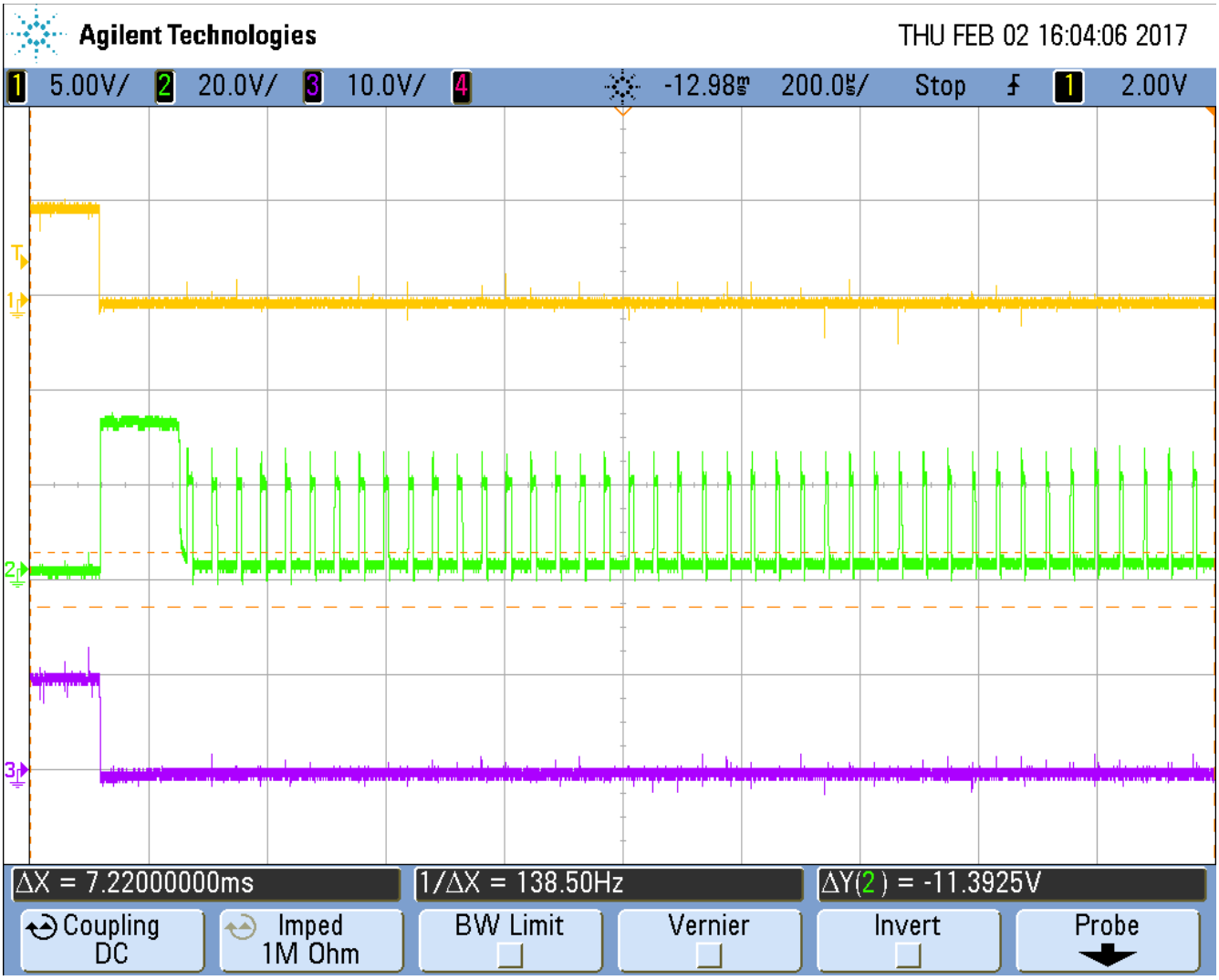

Agilent Technologies
FRI FEB 03 10:26:20 2017
1 5.00V/ 2 3 1.00V/ 4 -2.050s 2.000s/ Stop 1 2.44V
ΔX = 11.26000000ms
1/ΔX = 88.810Hz
ΔY(1) = -2.8475V
Mode Manual
Source 1
X Y
X1 -18.3000ms
X2 -7.04000ms
X1 X2


Agilent Technologies
FRI FEB 03 10:26:35 2017
1 5.00V/ 2 3 1.00V/ 4 -2.050s 10.00s/ Stop 1 2.44V
ΔX = 11.26000000ms
1/ΔX = 88.810Hz
ΔY(1) = -2.8475V
Mode Manual
Source 1
X Y
X1 -18.3000ms
X2 -7.04000ms
X1 X2

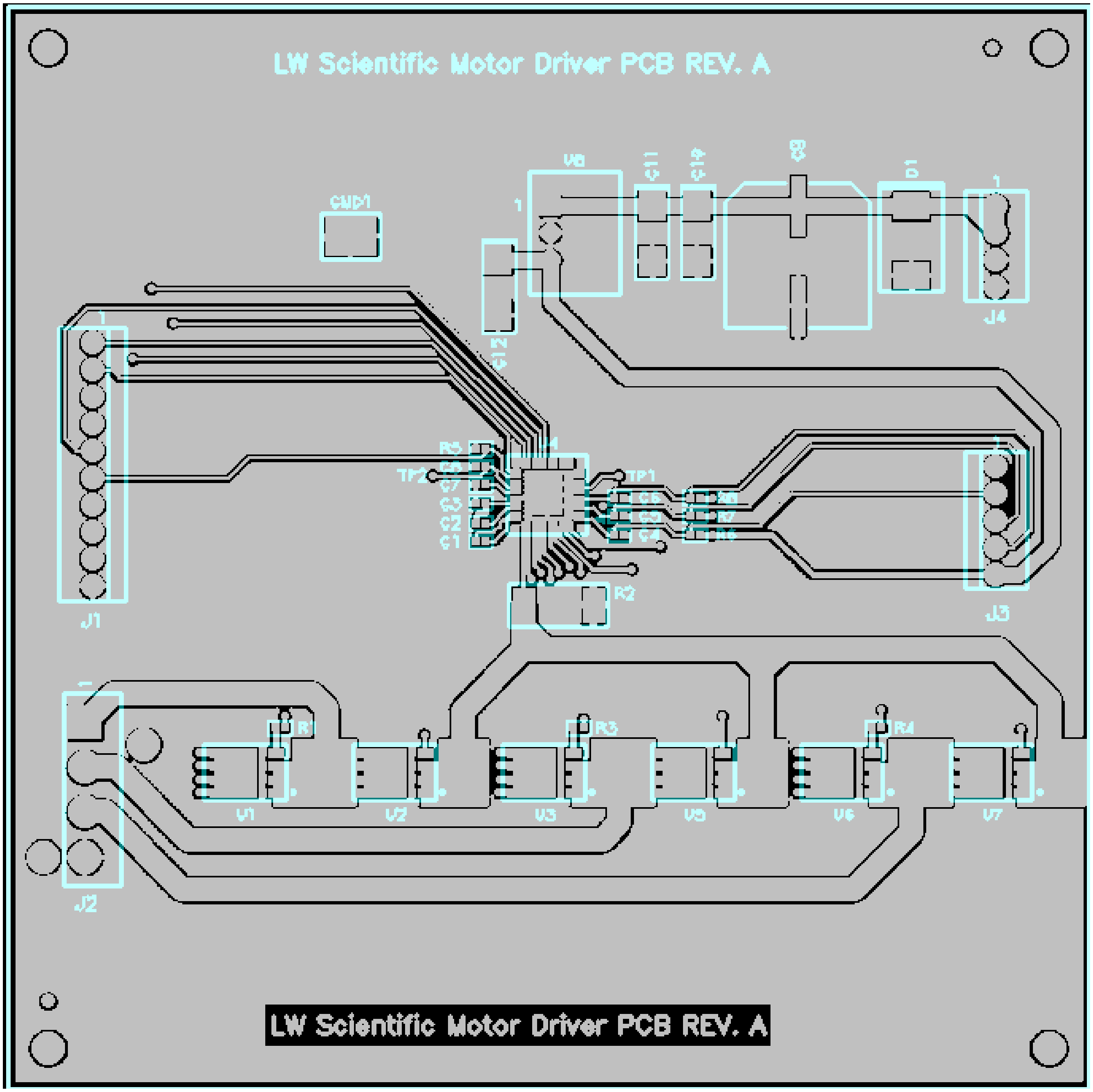

Agilent Technologies
FRI FEB 03 10:26:58 2017
1 5.00V/ 2 3 1.00V/ 4 -2.050s 20.00s/ Stop 1 2.44V
ΔX = 11.26000000ms
1/ΔX = 88.810Hz
ΔY(1) = -2.8475V
Mode Manual
Source 1
X Y
X1 -18.3000ms
X2 -7.04000ms
X1 X2

Measuring the GHx and GLx of the same phase
Channel 1: Hallout Signal
Channel 2: WHS_GATE signal
Channel 3: WLS_GATE Signal

Channel 1: Hallout Signal
Channel 2: WHS_GATE signal
Channel 3: WLS_GATE Signal

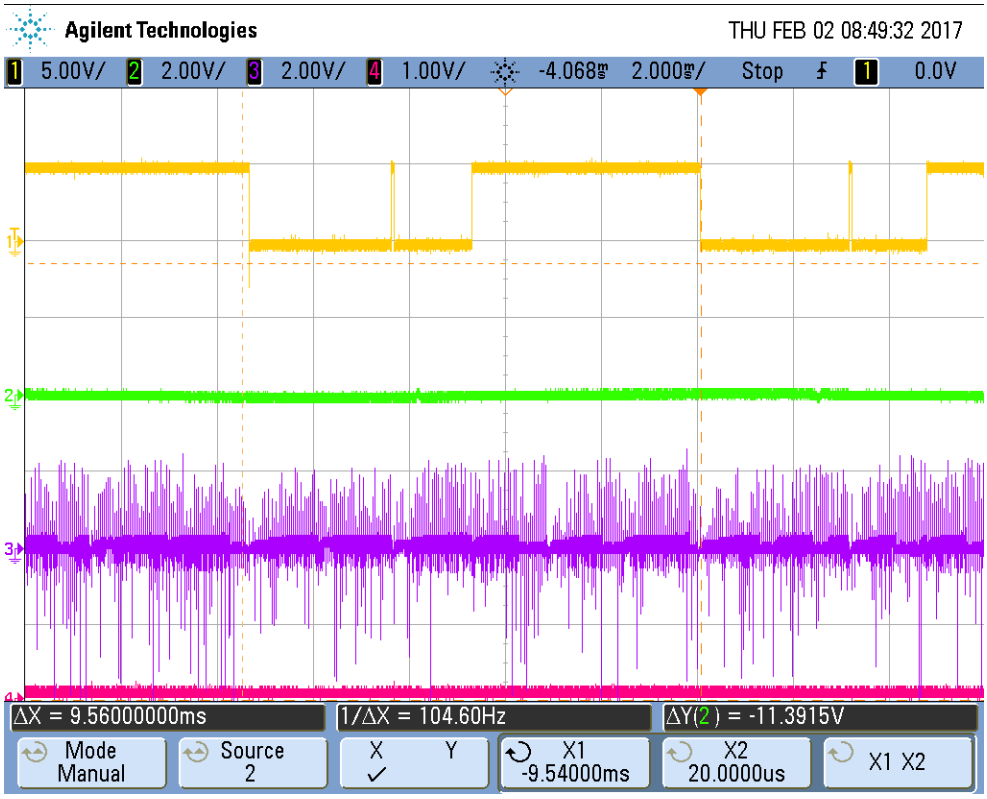

Agilent Technologies
THU FEB 02 16:04:06 2017
1 5.00V/ 2 20.0V/ 3 10.0V/ 4
-12.98ms 200.0us/ Stop
1 2.00V
ΔX = 7.22000000ms
1/ΔX = 138.50Hz
ΔY(2) = -11.3925V
Coupling DC
Imped 1M Ohm
BW Limit
Vernier
Invert
Probe

Channel 1: Hallout Signal
Channel 2: WHS_GATE signal
Channel 3: WLS_GATE Signal


LW Scientific Motor Driver PCB REV. A
U8
C11
C14
C9
D1
GND1
J4
C13
J1
U4
TP2
TP1
R5
C8
C7
C3
C2
C1
C6
C5
C4
R8
R7
R6
J3
R2
R1
R3
R4
U1
U2
U3
U5
U6
U7
J2
LW Scientific Motor Driver PCB REV. A

Comparing signals derived from the DRV8307EVM board

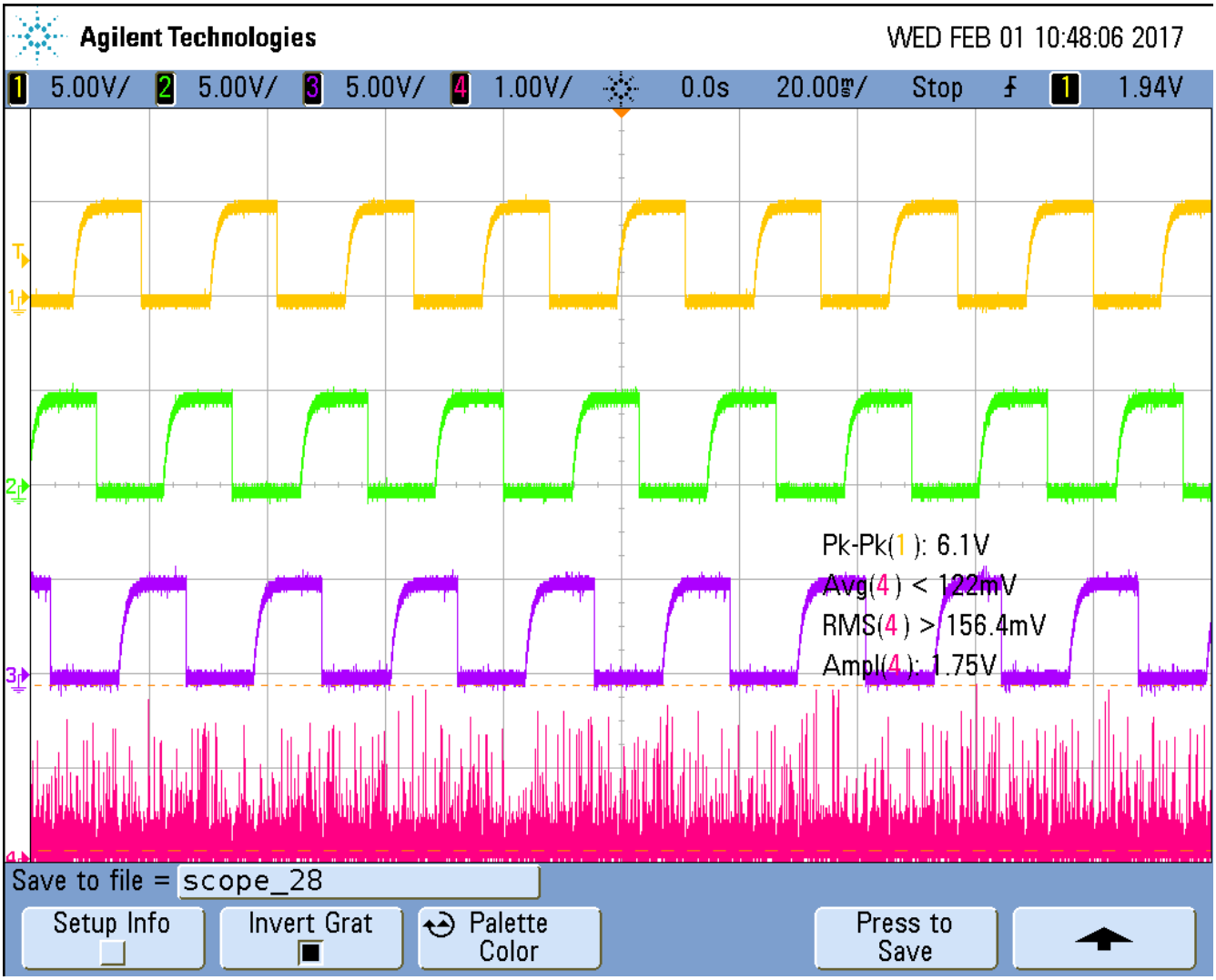
Channel 1: Hallout Signal
Channel 3: Isense signal



Motor Drive Signals for Verification

Channel 1: U Hall Sensor
Channel 2: V Hall Sensor
Channel 3: W Hall Sensor
Channel 4: U Motor Drive

Channel 1: U Hall Sensor
Channel 2: V Hall Sensor
Channel 3: W Hall Sensor
Channel 4: Isense



Note that the Isense average as measured by the scope is around 122mV. To me it looks like at least 250mV average and I believe the DRV8307 is hitting current limit and want allow any greater rpm.

I currently have a .028 ohm resistor for the Isense signal, which means the limit should be set for around 9 amp. I'm only getting to about 1.3 amps measured on my power supply.

Also, I'm getting regular current spike at 1.8V, which equates to 64 amps of current. Is this expected? I think this is causing both my .028 ohm resistor and the MOSFETS to run hot.